

WEAPONS OF MASS DESTRUCTION (WMD)

XB-35 Flying Wing

Aviation pioneer John Northrop spent decades developing the concept of an all-wing aircraft, trading the weight and drag of a conventional fuselage and tail for greater speed and range. Such a design, not needing a conventional fuselage and tail assembly, would produce much less drag as it moved through the air. The air resistance thus saved could in turn be traded for significant advantages: higher speed, or the ability to carry a greater load at much greater ranges. With no need to confine most of the payload within a narrow and heavily-stressed fuselage, that weight can be evenly distributed across most of the lifting surface, resulting in a lighter and more efficient structure. Northrop devoted much of his career to proving that the all-wing concept could be used in a practical aircraft.

The product of a long period of experimentation and development by one of the aviation community's most noted designers, the XB-35 was America's first attempt at an all-wing heavy bomber. In the darkest days of World War II, when it appeared that Nazi Germany might well conquer Great Britain and the Soviet Union, the Army Air Forces saw the need for a large bomber with intercontinental range. Such a plane, based in the United States, must be able to cross the Atlantic and hit Germany with a large bomb load. Jack Northrop saw this formidable requirement as made-to-order for his flying wing concept. Only a flying wing, freed of the weight and drag of a conventional fuselage and tail, could have the performance necessary to meet that need. Northrop began work on a full-scale version of his earlier designs. At about the same time, the rival Consolidated Aircraft Corporation began work on its own design, destined to become the Convair B-36.

Jack Northrop's XB-35 was a marvelous aircraft. Required to carry a 10,000-pound bomb load a distance of 10,000 miles, the futuristic plane was huge for its day: with a wing span of 172 feet and a length of only 53 feet, it stood 20 feet off the ground. Its dramatically-swept shape (the same span and degree of sweepback of today's B-2 bomber) was thrilling to see in the skies, particularly to a generation raised on aircraft of the 1930s and '40s. Seen from the side, it resembled a silver teardrop; viewed directly from the front, it nearly disappeared.

Four Pratt & Whitney R-4360 engines mounted internally, close to the leading edge. Each engine drove a pair of counter-rotating four-bladed propellers by means of a long extension shaft and a complex gearbox. Engines roaring and propellers churning, the bomber was a majestic sight in the air, but the complicated drive train proved to be its undoing. Because of serious and continuing problems with the propeller gear boxes, the dual propeller arrangement was soon replaced by a single propeller. The 3-blade propeller was replaced by a 4-blade type which slightly increased the overall performance of the aircraft.

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Stanley later said that he would never have known that he was piloting a flying wing if he hadn't looked behind him. But that was about the only trouble-free flight the bomber was ever to have.

Unfortunately, chronic problems with the propeller governors and the complicated gear boxes doomed the innovative bomber to early extinction. Numerous equipment failures had already delayed the plane's development by more than a year, and a host of gearbox and drive train problems plagued the flight test program.

The US government purchased 15 B-35s: two experimental planes and 13 service test versions. An order for for 200 production B-35Bs placed in June 1943 was canceled when it became apparent that the aircraft would not be ready in time for use in WWII. Only three B-35s were completed (two X-model and one Y-), and they accumulated only a modest number of hours in the air. The YB-35 flight test program only lasted a few months in mid-1948. The single flying YB-35 was in storage for about a year before being scrapped in 1949. In order to save the program, the government ordered the remainder of the initial service test models to be converted to jet power. The Air Force decided to authorize modification of two YB-35s by installing eight jet engines. These two aircraft were redesignated YB-49. Another YB-35A was modified with six jet engines and became the YRB-49A.

The basic concept was sound, however, and its 172-foot wingspan, sweepback angle, and total wing surface area were similar to the B-2 which appeared decades later.

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